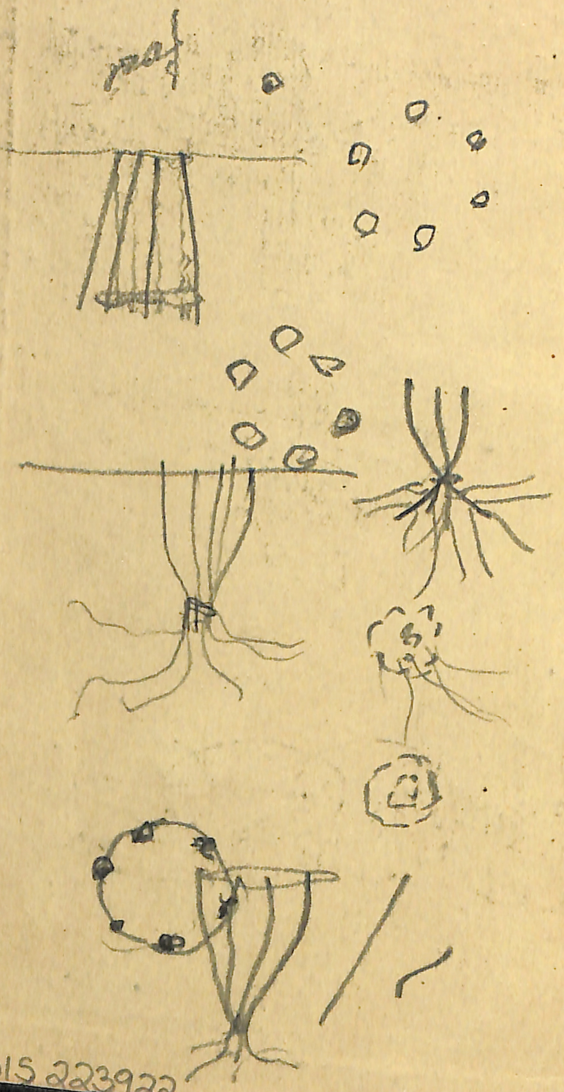
Pocket Notebook
PN 28-05-25 (1928)

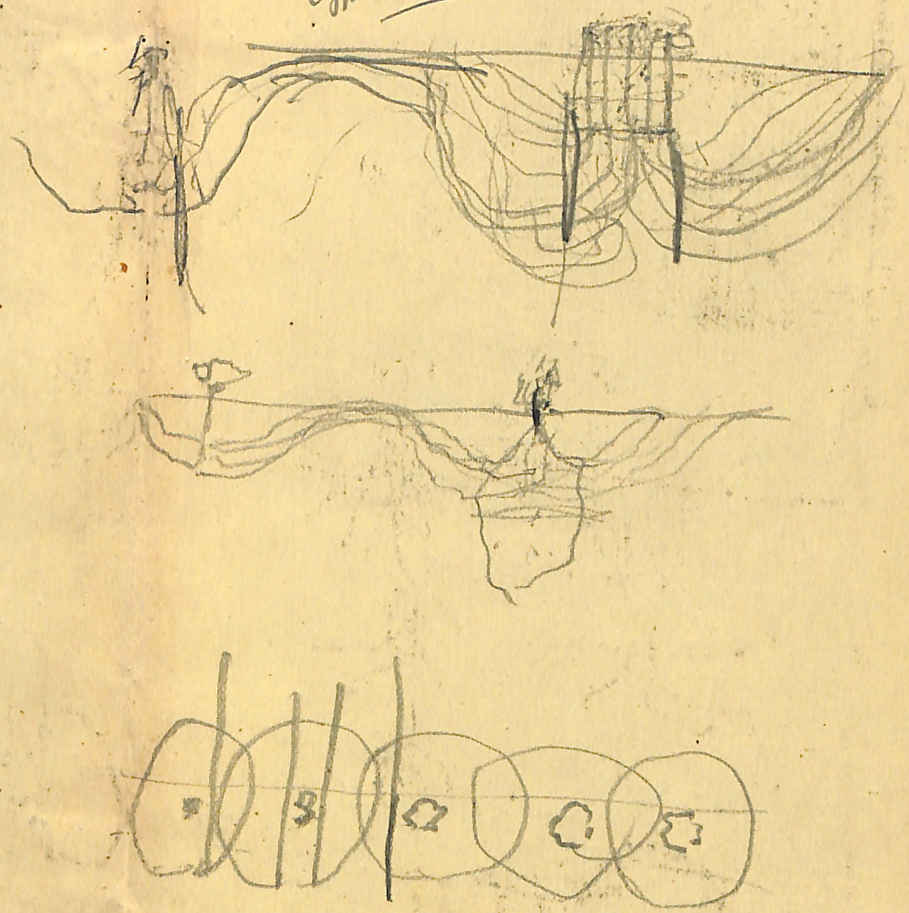
This notebook dates from May - July 1928. The pocket notebook contains notes by Thomas A. Edison relating to plants for rubber research. The notebook was found in Thomas A. Edison's desk at Glenmont.

May 25, 1928

1928-2

12/28/23
copied all except marked out parts
typewritten sheets 1 to 31 5.





EDIS 223922

2nd Vol 129 Watts – Gluten
p 874 – see

Tecoma Capanus
fam foliage

Clerodendron
Thompsonia

Big

Narcotine Opium
Alkaloid / dissolves
in 2.6 parts of Chloroform
& in 60 parts of
Acetic Ether

This Acetic Ether might
dissolve X from plants
free Ind rubber
from Gutta without
dissolving Gutta

Watts Vol 4, p 25,
Reg- also Narcotine
another Opium alkaloid
p 24- also 25-26-27
Narcotine is not
dissolved by Caustic K.
Potash or Ammonia

Vol 4 p 319 Reg
Oxypicramic acid

Vol 4 p 642 Watts Reg
Picrotoxin important
processes for purifying

p-648- picro reagent
important

p 743 Pseudo Berberine
Unimportant

Vol 5 Watts Reg
p 2
Quasson, reminds
writes Extract with
Gum free of Pectin
+other substances by
Charred bone"

from reading many processes
they put Animal Charcoal
which absorbs many things
which are afterwards
Extracted from the Charcoal
by Alcohol Etc
then is a new one

Vol 5 - p 100 read
Rhamnoxanthin
Exhaust branches 3 or 4 day
with Bisulfide Carbon
Evaporate extract to dryness
then exhaust with Alcohol
which leaves tats undissolved

Watts Dictionary

Vol 5 p 122

Rubian - very good article on use of animal Charcoal to extract colouring matters from plants

Vol 5 p 186

common elder

Sambucus Nigra - root bark an emetic, malic acid + a soft resin which may be obtained by treating the Alcoholic Extract with Ether. The soft resin may be used as Bird Lime turns dark. This may be "X"

Note - perhaps we can precipitate X from Dichloro Solution by [illegible], ammonia or gas chemicals Etc. Leaving rubber in Solution

Vol 1 p 125 - 6 - Etc

Watts

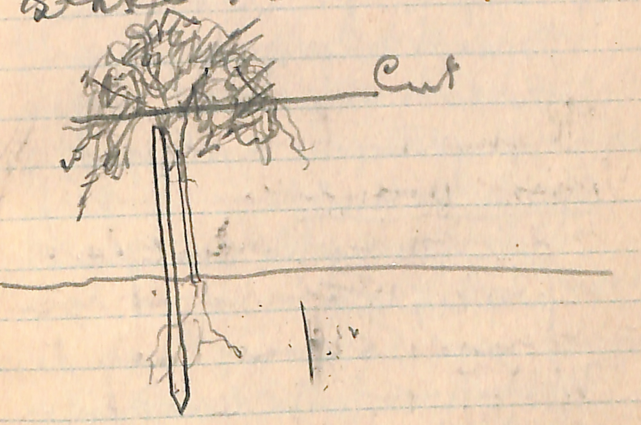
fine article on Alkaloids separation Etc.

Tales Alkaloids give precipitate w an acid Sol of phospho-Molybdate of Sodium see article -

Speaks of absorbing the Alkaloids by Animal Charcoal giving it 1 day when it would have absorbed all the Alkaloids - Note Try Animal Charcoal 24 hours in Dichloro Rubber Sol perhaps Charcoal will absorb X - Try more active Charcoal absorbents they have new charge

Dissolve different
gobs in Distilled
long time + test
Coat until recedes
so Not rubber - then
dry + weigh - Like
Schumann 4 the gain
use

Thicken fairly to thick
Enough to support itself
then the are cut + so on
until we get a self
supporting bush
Cut 1 inch above the
original stake the
stakes are the stems of
any plant finally
the Wire stems will
support themselves
stake removed



Stems rather climbing
Vines possibly can
use stakes, all placed
so top of stake are all
Exactly same height
The plant at top of stake
will bell out, when cut
the stems will grow

See 1st Sup Watts
Absinthin - p 1 -
process pfg

1st Sup p 54 Aconitine
Remove Oil by filtering
thru a wet filter -
quad ached 4 x 2 ad
3 filter papers used

1st Sup p 85 alkaloids
Base is precip from
Alcoholic Sol by
Hydrogen sulfide
Good article
see phosphio molybdic
precipitant

Metatungstic Acid is a
more delicate reagent for
Alkaloids than phospho Molybdic
acid precip in white flocks

1st Sup 101 - See Abstonia
assay - (Apocynaceae)

1st Sup Watts, p 255 -
Berberine - see last
part,

Ditto p 340 - 341.
Betaine

copy
Phosphomolybdic acid
seems to precip almost
all plant Alkaloids see
if it precips dissolved
Hevea rubber in rubber
sol with or without traces
if not precipted Say from
Dichloroethylene Then
dissolve some sticky
plant rubber in Dichloro +
see if precip is produced
with phosphomolybdic acid
product in acid sol

Perhaps if dichloro ethyl
Extract in dish were
heated 1 hour at 212
that all ofexcess ether
could be redissolved free
of X in large scale
this could be the dichloro
distilled off from 1st
Sol –

1st Emp p 417
Cathartic acid –

1st Emp Wells
p 944 phyroligenine
Note. Pulsatilla Mercurius
Podide.

1st Emp 992 Resins

Neutral lead acetate should
precip a lot of stuff in the
leaves particularly when
when dry Dichloro
would probably dissolve
these precipitates
perhaps a precipitate could
form in a dichloro washed
Solution – if excess is
necessary the lead could be
removed by bubbling
thro sulphuretted peroxide

at Robins – Halls Honeysuckle
Twice the leakage as at place, Woodhall
Orange – Shrink this
is V good plant for yes
Wed 26/28
Town of Wednesbury –
Halls Honeysuckle got
203 – Poor results

If general Defoliation
Machine is impracticable
Can make a Condensers
Cutter + Chop comparing
stems decom + all
the stems will be all
about whole lengths will
be long strips + can be
Defoliated by ordinary
or loaders

If not practicable
a rotary cliff mower
brush wheel tear
leaf off while they
were would not
cut stems hence a
pretty good dependence
would be possible

brush shaped revolve
with great velocity
4 ft sec should be
possible 240 ft min
3 ft wide = 14,400
ft hour nearly 3 miles

Brooksville Fla

~~Miss~~ Rev E B De Yoe

Music store bought and
Can get records & apply
but Edison phonograph
here —

May 25/28

Plant families with plants having Rubber, in Florida not N.J.

Cardiaceae
Apocynaceae
Asclepiadaceae
Verbenaceae
Bignoniaceae
Rubiaceae
Lamiaceae
Rhinanthraceae
Ambrosia
Aquafoliaceae
Rhizophoraceae
Caprifoliaceae

Doubtful Euphorbiaceae
Convolvulaceae
Acanthaceae
Combretaceae
Oleaceae
Elaeagnaceae
Aristolochiaceae

Fla 325
big foliage

303 big foliage 43% Rubber Cond
363 " 58%
1215 fair " 55%

Trees in Rubber Age
May 25 - That there has been experiment with 95 Hevea trees Labelled in Bayeux Haiti -
Technical Bulletin
US Bureau Ag post
pub #95 of Dept Ag
Cords are sent to Haiti
I told Rod to get in touch with Newman

1440 + flowers
numbers TT
shoots thicker much
pith higher than
rod at 1000 ft
is not so good.
No Cyprus

Visited Chapman
field today. They have
very few plants mostly
Rubber. They carry
what plant they plant
& then give them away
not wanting a single
one to obtain seeds
or Cuttings -
Archer & Jones with
Dr Small - myself present

over grounds Tomorrow
Jonas & Arthur will
pick 1 to 2 oz leaves
from every plant
they have including
some Cannas,
some Apocynum
& Everything else they
can
will also pick
10 samples from
10 plants of the
Crapemyrtle -
Grandiflora that
shows no signs
so far of climbing
on each other
As they will only
have 4 or 5

hours before starting
back they will
come again 2 or
3 times each week

I feel that it is terpene
that is the X ingredient
in our subtance—
See if Terpin hydrochlorate
is sol in water

Perhaps Aqua Regia
reaction is due to
Chlorine attacking the
X terpene in water
solution — see if
non water sol of
aqua Regia can
be made, also
also Aqua Regia
manipulated in
various ways

with Metallic Sodium
put in Strong Sol. of
Rubber in dichlorethylene
Combine with the X
terpene —

Araliaceae — Ginseng
family great tolerance
blends well with wood
relations — back hedges
at Hialeah at Coconut grove
near Miami

Chenopodiaceae
2 kinds [illegible] near end
of the Kennedy Key at
Country [illegible] road
[Henry] enormous
development of one
kind — big Roots
got samples

Left hand Cotted
fungi & Yeast stock

Apocynaceae is related
to the Gentinaceae

Leaves of Oleander infusion
is an insecticide etc
Bark a rat poison

A- Strophanthus is
a heart poison
ditto A- Aspidosperma
(quebracho bark)

A- Alstonia a Tonic
several species of Apocynaceae
give prints. lasting

Left Cotton -
Wrightia tinctoria furnishes an
Indigo W. Tomentosa
a Yellow dye
20 to 25 genera are
Cultivated in N America
as ornamental plants
mostly in the South or
Greenhouses

Carissa -
Christs Thorn
Amsonia
Carissa
Apocynum
Oleander
Tabernaemontana
Crape Jasmine
Vinca (periwinkle)
130 genera + 1000 species
6 species reach N E
America

Send all Lab note books including Jonas old Note books made North also Ida Lab books Hands Osborn & Schmerka & mine here

Send Barley - Brittons & Smalls books & others not use much —

Remember to append an getting longer papers (Loeb)

from reading Abstracts to books as of Sachsat, app should work in darkness also Reflux Condenser

Extensive Expts should be made with precipitated dry, both anhydrous & dry hydrates, also Conc inorganic Chemical - both acid alkalin & neutral, precips & test to absorb impurities from Crude plant Rubber

Try the Spherical precips of Carbonate Magnesia & chalk phone & finest sugs spheres

Try 1/2 Dichloro 1/2 Ethyl - Rubber will not dissolve but X may - then reduce Rubber in Dichloro

Tree of Clerodendron
Thompsonia
gave Rubber

Native rubber in Java Sumatra
Average daily wages of per
Dry rubber – 1 Tapper to
5 lbs } with this grade only
3.5 } 1 tap per week
3.0 }
2.5 } Perhaps usual
2.0 } Tapers – who get
2.0 orders } ½ lbs Rubber
for Topping

Estate Tappers bring in
2 or 3 times the above
amount

Ocrosia Nukuoa
Japanica 2 buds for
Oranges –

Lagerstromia
Punk ~~1 set buds~~

Myrica Cerifera
2 buds

Capri
No 1 2 buds.

~~Bignonia~~ Pithecolobium
Jobia Can be pulled
up & burnt

305 very Nigeria
good for land seed
Rubber
•93 1/0 ~~Ideal plan~~
for mechanical Operation

At Orange get some Nickel 50 mesh screen to purify Sticky rubber in NaOH in Alcohol

Copy

W2 Exhausted Flame Vine with Acetone then Alcohol then dichloro. Coating 30 Mg Ethyl Xanthate This gave good results But I noted that the Acetone residue was small while the Alcohol which followed was very large + stiff-

W2 then reversed it Exhausted 1st with Alcohol This gave big residue Then Acetone which gave very small brownish residue then + dissolved

Curious Flame Vine

1st Methyl Al
2 Acetone
3 Dichlor Rubber flattens in dish NG

Reversed Extraction

1st Acetone
2 Methyl Alcohol
3 Dichlor Fine residue

Explain above

= finish at Orange

Try 1st Methyl + NaOH Reflex
2 Then Acetone
3 Then Dichloro

Also Try Ethyl

Approx June 7/28

Florida Col	393
Florida Edison Col	102
N Jersey Col	50
	545

Plants that have Rubber

In Orange ppt by Alcoholic Barium Hydroxy. K Alcohol also NaOH in Various Alcohols – also Alkali in Water –

73 grms dry
22 ashes
146.0
146.0
146.0
760.0

367
50
2936

367
20
734

Trace Brown Enquire Uses used in Lab at Orange

That Russian says Dinitrobenzol + also Trinitro 6– Vulcanize rubber Try it on

Fla 305. a Considerable quantity of this plant Can be found on Crescent Beach road – after leaving McG Bird the plants are along the forest Current after the RR. These are dug + transplanted. start 60 more got 30 now

Weight leaves plant not fully grown 367 grms
Weight Stems 118
Both green Both dry

Unpeeps leaves appear succulent Thanks
trace SO4 Wahl
4 ft apparent pithy hairs
1 ton cedar dry
leaves - Wound fungus
90 of these at 1st fund

When at Orange
make a shredding
Machine to determine
breaking point

Also to Rolf ant sheet
to make test pieces
or otherwise + also
to put in specimen of
Ricked sewing

Moulds to Vulcanize
Accelerator - Mixing
Rolls
Eastman + other
Chemicals from

Commercial Mfrs
Test for retaining (ie) Elastically

Hevea to be standard
not crepe.

Inv. ground leaf not
dried —

4 sets 4 Each
percolators glass
1/2" inside 6" long

Expands to get all
solvents. Crack +
determine low
temperature

See if can get a test for Rubber by dipping a green leaf in a Chemical

US Dispensatory
p 107 Alstonia constricta F. Muell (Apocynaceae) Dita Bark
a - Schlorin Have tested it

Compositae = Echinacea - root, etc.
Brauneria angustifolium west of Ohio - p 418 Dispensatory

Eupatorium (Compositae) Boneset perennial all parts US - p 447 US Dispensatory

see long article "Extracts" US Dispensatory

also see "Fluid Extracts" percolation p 488 USD

Nearly all plants have Calcium Oxalate

Grindelia (Compositae)
G - Camporum
G - Cuneifolia
G - Squarrosa
25 species W of the Mississippi River
perennials to Bi Ennual
Called Gum plants sticky on stems & leaves

Pulled up by roots on road 1 to 2 ft apart
Use Bend or Crescent
B road plat Then w
water all night no
dirt on roots - planted
the 3 used Rain water
tank no dirt no mud
to see if they will
live with this treatment

Oct 16/24

Dichloro Sols of Rubber
precip by mangnese Alcohol
or Alcohol + water
Let it come to temp, draw
off clear supernat add
fresh water + then draw
off clear sols as these
probably cannot be filtered
as it may run there use
bone black + filter
dry + weigh also in
Dichloro + distill off
off to temp

Important Expmt is
To use Reflux Condenser
with plain Rubber +
determine loss in 4
hours of pure Dichloro
+ also Trichloroethylene
Then use a water
Cooled Reflux + get loss

also use large surface
Condenser - 1½% loss

Also percolate
residue to displace
the Solvent by water
- air + also distilling
with water + air, CO_2 & R Etc
to get loss - This is
very important

Imitate the Indian
Chewing gum of Gamgule
+ Chenopodium
Vernicalpin - Shamp
Mill, Wash Mixer Etc

See if Latex work of
a leaf has the rubber
that can poly remove
it + only treat pulp

whether wound probably
double the rubber
& have a coarse fabric
as a byproduct.

Tapping Machine – it
may be a good idea to
have the vent instead of
open free hole for air
to permit water drop a
free Vent the substitute
a glass powder Column
Much less Resistance
that the Water Tank
Column The present
Vent hole causes the
Trap pressure to fall
Too low in fact falls
faster than the Trap
can make pressure
Thus conserves pressure
& Valve will flow longer
Tank vent is OK to
Control the water but
glass Column is

Necessary to Control &
Conserve Trap pressure
There may be a BIG
point with the whole
Scheme providing
gasket hold air tight

Incorporating the last
traces of solvent,
use a circulating system
of CO_2 or dry form of
Oxygen to sweep
the Vapor from powder
into a powerful
Condenser – or
absorb Vapor into a
high BP Solvent
like wax and Benzol
in ~~water~~ mineral oil –
~~water~~ steel jacket
with hot water &
also by vacuum

Ha 303 Ball like
305 – big foliage
322 pretty good
363 697
372 pldy grow plenty
foliage
ditto 362

1st plant of 30
305 June 11/28
flowering + very healthy

X Alata all
apparently dead
may come also
right
X Japonica Many
losing leaves

Ethyl Acetate ~~Gol~~ +
17 parts of water —
Water Sol in Reflex
might be better than
pure which dissolves
Rubber somewhat

Have UA Dropper along
+ a fuller analysis
of Drugs sent North

Give Ammonia a good
trial to see if after
dissolving out latex
Nicotine by Water
, Acetone – Alcohol
Ammonia will
make a Latex as
Rubber can be
washed out

Instead of dissolving A out by Solvents like Dichloro or Trichloro

1st Water + alkali
2nd Acetone —
3 Ammonia —

also by other preservatives of latex

using Peroxide
to get rich latex

A Conc Sol of Zinc ammonium Sulphate is a test for KOH, gives precipitate possibly for Nitrate or Stronger but to get stronger KOH and N.OH.

Try McCallum Methods also Wright High Ammonia also

If your trouble is Terpene add Turpentine also specific Terpene to Hevea Creep, and then Expand To remove it to Hevea is Okanagan

There is a terpene in Rosin to make it always sticky. Try 1/4 1/2 1% 2 1/2% Sulphur + Vulcanize Rosin + See if it stops sticky feet does X is the terpene — its must be a liquid V high BP + no vapour tension

Dry 2 or 3 Grm rubber
Galanta dissd 212
240 280 + 320°?

Sesquiterpene gives solid
precip when HCl gas —
passed into the Cooled
Liquid.

Diterpene - Very Viscous

terpinene Completely
destroyed with the cold
by mixture of 6 pts of
$Na_2C_2O_7$ + 5 pts H_2SO_4
+ 36 parts of water —

Pinene not destroyed
by above

Sylvestrene (Turpentine)
Sol in Acetic Anhydride,
removed by Dihydrochloride

by action of Dry HCl gas

Pinene, Amer Turpentine
HCl gas gives Precip of
Pinene Hydrochloride
Artificial Camphor

Unreduced Italian
dissolves in Hydrogen
the Fe will go
Metallic and can
Dissolve it out by
Acid Acid - Cold Pyro

Many things from plants
like Eucalyptus oils
Combine with acid Sodium
Sulphite

Many plant Extracts have substances which can be oxidized to acids + then Extracted with Alkalis

We might distil the powdered plant with steam at 320°F - get a lot of stuff off without hurting Rubber

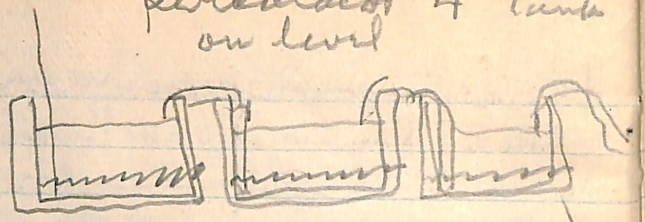
Our turpentine consists of Western ~~Turpene~~ Pinine $C_{10}H_{16}$ BP 160°C - with small quantities of oxidation products, Resin, + Polymerized hydrocarbons

HCl gas in absence of water or Alcohol Combines with Terpines to form a monohydrochloride, with water or alcohol forms Dihydrochlorides with Nitrosyl Chloride gives a Compound from which by action of alcoholic potash another substance is formed Treated with Strong Sulphuric or phosphoric they form with Evolution of much heat into Viscid polymerides (colophane)

Patent ~~The~~ Oscillation of trucks on Motors

Oxidize plant leaf powder with very weak permanganate Mn - then wash dry + Asphalt treat with 3% alcohol Na

Percolator 4 Tanks on level



in last Val applied Chemistry Watts under Soda & Solano process Leaching black ash

Enzymes are completely destroyed just below 100° C perhaps 200 @ 205° F

Methyl-Ethyl Ketone has same BP as Alcohol

Acetone is a Ketone

Methyl hydroxyethyl Keton BP 80° C

in Lixiviation by Tanks in series all at same levels

used for Chili Nitrate
Beet Sugar - Soda, Leblanc process

process so arranged that at any given moment a nearly exhausted Lot is passing over a fresh supply of stiff while clean fresh water is running from the nearly Exhausted residue When the residue of any tank is Completely Exhausted it is renewed fresh stuff put in that tank made the last of the series in some cases a pump

is necessary between each tank
to pump the liquid from beneath
the false bottom in the next tank
See Drayplin Lixiviation Wells
Applied Chem p 344

Greasewood
(Sarcobatus Vermiculatus)
grows in alkaline soils
that kills other crops -
Queen Valley, Nevada
also Grantsville Utah
water table generally near
the surface

Alkaline Plains + slopes
of the Cordillera + Artemisia
belts forming large Colonies
Montana To N Mexico
West ward to Washington
East.

120 transplants of 305 Fla
Sideranthus Megacephalus
(Compositae) Leaves .30%

Edison plant Col. same plant
1.20% - #122.

Okeba - Japonica
Vine on Porch
whorled leaves, think has
rubber - send family
got sample Aug 15/28

Extraction Apparatus
Soxhlet with reference
Watts Dict of Applied
Chem Vol 2 p 475
Hunt up References

Geo Schuchardt
Catalog rare chemicals

Enzymes are precipitated by Alcohol [nearly all] are insol in 75 @ 90% Alcohol but must be done quickly as Al has bad effect on Enzymes. Coca with 100% alcohol & then ether, gives white powder

Vol II Watts Applied Chem p 504

Akebia quinata

[Lardizabalaceae]

5 Leafed Akebia Japan

Hardy – at House Orange

Slender Twining climber

15 ft purple flowers

Vigerous growth and a fairly dense shade

propogated by Cuttings + seeds

See Bulletin of Expmt Station – (agriculture University of Florida #188

8 genera 18 species

Himalayan China Japan + Chili Edible fruits

Stems of L- Boquela + Lardizabala used as Cordage.

Lardizabala, Stauntonia, Akebia + Sargentodoxa are in the American Trade

Test Barbary bush related to Akebia

Calotropis Asclepiadaceae

Calotropis Gigantica, grown a foot in 8 days

Leaves oval + 6 to a foot of a gigantic bush 6 ft tall + with a thick mass of hoary foliage

Each leaf weighs almost a 1/4 of a lb – Its sap is a principal source of Rubber in Africa

Calotropis gigantea grows
India bowstring Hemp
American Hemp grown by
Apocynum Cannabinum plant

June 23/28

It looks as if flotation
could be used to separate
the Rubber from the
ground up plant.
by using a substance
having a slight solvent
effect on rubber, pulling
this in water + blowing
air thru to make a
froth of this mongrel
which will stick to
Rubber + leaf
particles + buoy the
Rubber up - We then
removing the froth
Containing the Rubber

I have a very good
book published by
Colorado School of
Mines that gives full
information about
flotation of ores

Try some ground
Cautsoun leaves after
soaks in the Latex treated
Water see if it grows
pasty use water if it
does - Water long for
3 days + then try
using + put close
fit see what is
necessary to make
close fit —
boil first, then Vac filter
+ warm up water by Burner

If it shows sign
Mew Exhaust with
Acetone If Mew put
in Brand Mixer

Consider growing
Canna at Home
place Cattle manure
pumped Cotton seed meal
Wood + Mud pulped
Water —

overflows

grind some Canna
in Ball Mill, cold water
then remove fiber wash
on filter, dry 120°F
+ then Rec Hydrocarbons
powder —

Do the same Cooking work
to grind

also Baking water with
Soda (Caustic) re-
fiber wash free Soda
Then dry + Extract
with Rec Hydrocarbons

The stuff can be boiled
in Water before put in
Ball mill,

get Directory of
Nurseries in all the
W Indies Clear to
Trinidad — also
Venezuela + northern
big Cities of S America
Ascent and North US
Consul — Make list
of Cities — Don't know Callaos

get from Govt
Publications + Experiment
Station Reports

Chemicals	Water	Cent
	Water —	100 C
Acetic Aldehyde	Vsol —	120 BP. 20.8
Acetone	" —	94 56.5
Allyl Alcohol	—	96.6
allylamine	—	56.5
" Bromide	—	70.1
" Ether	Water S Sol	94.
Allylene	"	62
amylene	"	36
Benzol	insol Water	80.36
Butyl Acetylene		68@70
" Alcohol [n]	8.3 H_2O	117 X
" " K	S Sol	115
" " Sec	V Sol	99.8
Butylamine	Sol	75.5
Butyl bromide		99.8
Butyric Aldehyde	3.6	73.
Carbon Tetrachloride		76.
Chloromethyl Ether	Dec	59
Chloral	V Sol	97
Chloral hydrate	V Sol	97
Chloroform	0.8	61.2

Cyclo pentadene	——	42.2
" Pentene	——	42
Diacetyl	25	87
Diallyl	insol	59
Diallylene		70
Dichloropropane 2.2-		69
Diethylamine	V sol	55
Dihydro benzene (1-2)		82.
Dimethyl Carbonate	insol	89
" Ethylene		65
" pentene (2-2.3-)		75
" " (2-2.4)		83
Dipropargyl		86
Ether	7.4 H_2O	34.9
Ethyl acetate	6 "	77-
" Alcohol		78.4
Ethyl allyl Ether		66
" Bromide	.9 ——	38.7
" butyl Ether		91
" Chlorocarbonate	dec	94
" Formate	11 H_2O —	54
" hydrazine	V sol	99.5

Ethyl hydroxylamine v sol 68
" hypochlorite 36
" Isobutyl Ether 7.8
" Isopropyl Ether sol 54
" Nitrate mod. 87
" " (K) 86
" perchlorate mod 74
" propargyl Ether 80
" Sulphide mod. 92
Ethylene Chloride .8 83
" " [K] 83.4
" Nitrite mod 96
Ethylidene Chloride 59.9
Fluor-benzene 85
Formic acid 100
Glycol dimethyl Ether 83
Heptane n 98
" " 86
Heptylene " 98
Hexane n 69
" " 58
" " 64

Hexylene 68@70
Isoamyl Nitrite mod 99
Isobutyl aldehyde 63
" amine v sol 68
" formate 1. 98.5

Isoheptane 90
Isohexane 62
Isopentane —— 30
Isoprene 97°7 BP —— 35.8
Isopropyl acetate 90
" acetylene 28.9
" Alcohol 82@85
" amine v sol 31.5
" Ether 69
Ethylene 21

Isovalene aldehyde 92
Ketobutyric acid oil 78
Lactic acid 83-

Methyl acetate 33. Water 57
" acrylate 80
" allyl Ether — 46
Methylal — 45
" K — 41
Methyl alcohol 66.8
" Ether 46
" Borate 65
" Butadirene 104° F 40
" Butyl Ether 70
" Ethyl Ketone 78
" Ethyl Sulphide 67
" Formate — 32
" Hydrazine 87

Propyacard Ether 61
Methyl propyl Ether 38
Methylene Chloride — 41.6
" Di Ethyl Ether 89
Neohexane 49.7
Pentamethylene 50
" Oxide 81
Pentane " — 36

Dichlorethylene BP 55°
own Limits 49 - to 58
Propyl Alcohol 97.4
" Bromide 70.8
" Chloride 46.5
" " Sec 36.5
" Ether 90.7
" Nitrite 57
Propylene Oxide — 38
Vinyl Ether — 39
Vinyl Ethyl Ether — 35.5
all in Ohsen

Can get more from Bennett
Tables 2 Books and Reference

Tests smell like Neoll at def
temp, 500 rpm
to Boil temp range, 132°7
average. Reg 1100
1
2
3
4
Get Group

freezing 600 Mthly
Carissa with alcohol
Remove gob quick,
Put in alcohol to soak
+ then Evap Dichloro + al
+ see what is nature
of residue

Also Exhaust with
acetone another lot
then Exhaust with my
last of a non solvent
for Hevea - Then
~~then~~ then remove
then solvne from powder
& dissolve in Dichloro
See if OK first
purify with NaOH
+ Sk

Reflex Condense 600 Mthly
Carissa 3% or 4% NaOH
in Acalics, then Acetone, then
Dichloro

Put 24 Hevea worms
in Dichlo mixed with
100% Ethyl ½ + ½

Dup 60 Dichlo 40 al
Dup 75 " 30 al
Dup 85 " 15 al

See which dissolves

Reworking with Dough
Mixer used a foaming
substance and gas to carry
off woody particles
the other woods free
of solution + segregating
Rubber —

Boil the powder in Water
212°F to kill enzymes
Use much Remember
to while Mixer gradually
dilute to over flow + carry
off fines —

Carissa, Boil to Kill
Enzymes, Hold 24 hours
then Bread Mixer

Carrot Nap't. Boil
filter use pulp
then Bread Mixer

Chlorophyll Sol in Alkali

Resinate Dyes soap
Same as used at Edison
in draft tube, for Bread
Mixer

Order for small Bread
Mixer 2 extra arms
Castings so we can make
Closer sets or what we have
Let Mfr bore out a frame
to get closer set —

Think we have a small
Bogardus Paint Mill
find it — also go paint
Mill Catalog —

Ford planter tests of $Ni(OH)_2$ heated to various temps

Reg- to 1 V	average	1100
heat to 210		1173
heated to 400		1153
Heated to 450		1093
heated to 500	Heavy black	1099
heated to 550	Black	926

get temperatures

Dry Ammonia gas dissolves in Ethers

Hydrogen Sodium sulphite reacts on Acetone - used for purification The deposited Crystals $C_3H_6O + NaHSO_3$ being heated + decomposed with KOH

Resins are sol in Ethers also sol in Ether when insol in Alcohol

KOH + NaOH Sol in Ether 1 in 25 in case of KOH, less sol in NaOH, Carb soda dissolves many resins

NaOH insol in Acetone Sol in Amyl hydrate (Fusel oil) also in Sol Glycerine

Dec of Glycerine precipitates Rubber from Perchloric

Try in Bread Water Mangrove Heterophyllum after boiling

Schmeck get % of Mangrove & Heterophyllum + other leaves we have a quantity of -

Collect a lot of Milkweed
Steam Steam Dry at 120
after dry pull leaves off
test — also Alder bark
bush

Schematic test ½ of all
Mangrove series done &
preserved 4 Each of each Kind

Set up the overall
Chlorate Mill -

If rubber Latex is acidified
+ Coagulate boiled Then
the Coagulate Boiled in
Water Impact affected
by fungoid growth
whereas many rubbers
not so treated go to a
Sticky viscous stuff
We could adopt
Killing fungus by
Poisoning in water

Have Hart use separating
funnel + shake Acetone w
powder + see action — dilute
try Dichloro Small amount
with and Acetone,

Exhaust Carissa with
Trichloroethylene direct,
then process with Alcohol
use no acetone

Dep - Exhaust Trichloro
treat residue with
Na OH Ethyl -

Dep with Dichloro

Green leaves, boiled
with Na Sulfite 20
dont grudge -

Dissolve the Dreherite Rosin Rubber in Acetone & filter w small funnel

find out from Henderson the percentage of K Cl in Heliochromyacin

find out the Golden Rod with the largest amount of weight of leaves

Thursday Collect several lbs of seeds

July 7/28

Oxidized fine Metallic Nickel screen Oxidized 1/2 thin would be a perfect separator we find Steel - as this would be expensive 002 sheet Ni perforated & burrs flatten & whole oxidized 1/2 thin covered be cheap

Look up way Ni pyrolate patent using Nickel -

Terpenes BP 150 to 175°C
= 302°F 347°F
Nitric Acid + Alcohol mixture yields Crystalized Terpene hydrate,

Antimonate of Sodium
2 $NaSbO_3$ 7 water
Sol .031 at 12°C

Pyroantimonate 5 Sol

Na_3CrO_4 3 water
Sesperchromate soda 5 Sol

Black Oxide tin insol alkalis

Acetic Aldehyde
BP 20° C

Dichloro aldehyde
BP 88° C

Isobutyl Aldehyde
BP 63° C

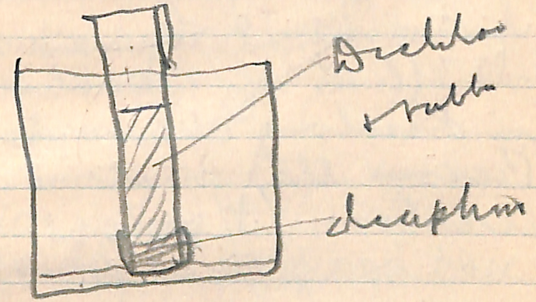
Propionic Aldehyde
BP 48° C

Turpentine V slightly Sol
in Alcohol, but very
Sol in Ether BP of
Turpentine 156° C various
with sources —

Terpene V Sol Alcohol
BP 218° C V Sol Ether

Handy patent operating
Brushes of search Co

See if Rubber in Dichloro
Can be separated Osmotically



Spirit Try Electrodes

Try precipg Rubber out of
dichloro by water & then
filtering out precip = NG

Take the pellan 1/2 of fresh
ground Cameron, grind 3
hours then add water
grind for hours then
Extract out & put in Closed
Jar to water bag

Be sure to find if Acetone precipitates rubber from Dichlo if it dont it explains bad effects of alcohol in dissolving chlorophyll Because alc instead of Acetone it precips OK but not as good as Acetone

Try ½ Acetone ½ water to precipitate Dichloro Rubber out-

Instead of 3% NaOH in alc for purifying gobs of rubber add 2.5% meta another 500 meta another 1 gr + precip Dichloro out of Rubber

When all rubber is in Dichloro precip by 100% Alc in flask - distill off Dichloro see how it acts -

Have 200 cc of IRI-Chlorophyll
3 gms Rubber +
4 " Resin made

Drop of Acetone Dichloro
No Resin + precip by water, rock it around + can be filtered + Trichlo Settle out + loss of Trichloro in water

Possible by products of Cannera
fruit, jelly, Marmalade, alcohol,
sugar, syrup, - Seeds for oil
. Pulp for cattle feed
Leaves for rubber, wood
for paper, ground leaves
after extraction for oxalic
acid, Manure, fibre, Etc

Ask Schmerka if he can't
use 1 chg of Dichforo to
Ephraim 4 to 6 drum lots
of Acetone treated powder

Schmerka Weight out 1
charge of Dichloro
treat 3 hours No stuff in
tube then weight get loss

Drop with Trichloro

Tons Diaphragm flow No
reduced by H press to air
sheet Three Oxides

Oh Ho - Make separation
of mixed ferric Oxide =
perhaps Crystalized Haematite
be ok - Specular iron ore
Macroscopic iron

Perhaps Italian Asbestos
reduced at yellow + then
brought to white heat.
with fruit. together again

Granules of Oxide Ba
in sheet treated with
Sulfuric acid to make
Ba SO4 in situ

Ether dissolves Terpenes
Alcohol dont precip
Carissa with mixture of
1/2 Ether + 1/2 alcohol
Use Rubber to weed out Ether
or Alcohol

Oxidizing Agents
Na Hypochlorite
Permanganate K
Ferricyanide K
Peroxide Soda
Peroxide of Hydrogen
Ozone
Nitrogen Peroxide
Nitric Acid, Aqua
Chromic Acid,
Ferric Chloride
Peroxide of Silver
Oxide of Silver
Peroxide Lead
$Ni(OH)_3$
persulphates

Peroxide Manganese
Peroxide Cobalt.
Bromine
Chlorine,
Na Peroxide.
Air
Air + a Catalyzer

Pinene is transformed into Colophene by Contact with Conc H_2SO_4 or phosphoric Anhydride

Pinene treated to 50° with 20% Sb chloride is changed to Tetra-Terebenthene + Al ferric + ZnCl2 causes formation of analogous product

Sulfuric acid provokes many isomerization among the terpenes

Thus Pinene warmed with Sulphuric acid diluted with its own Vol of water is changed to Camphene, Tapmene, + dipentene

L-Pinene dissolved in glacial acetic warmed to 60-70°C isomerizes into L-Limonene when 5% phosphoric acid is added

Ethyl Alcohol. is a hydroxide
+ Comparison with Caustic
Potash
$C_2H_5^- + OH^-$

Silver Oxide is a hydroxide.
AgOH.

Alkali metals dissolve in
Alkali with evolution of Hydrogen
forming Ethylate of Sodium

Schmerka makes some
10% aqua Regia in
water instead of Alcohol.
to see if it works on
Manganese if not add a
little Alcohol

Try Nickel in 100%
alcohol with gaseous HCl
to make aqua Regia
to keep water absent

Try Chlorine itself
in Alcohol
get some Isoprene
+ Butadiene + try
them with aqua Regia
in Alcohol.

Try Manganese measured
in cc. + 3 times it bulk
with 3% aqua Regia —
Dup 5%.
Dup 10%.
acted on 1 hour each

Conjugate Manganese 71 mg
to 1 cc by 10% HCl alone
in 100% alcohol - Vial.

Pass HCl dry into Dichloro Sol of Manganous if dont precip add Alcohol after 1½ hours –

Precip Manganous rubber Vial by caution pour 10% aqua regia over top + let it stand sd Aqua R work gradually penetrate + shake at angle gob –

Try same as above with a phosphomolybdate –

Try the Silicofluoride with Ba –

By heating a mixture of Bichromate Potash + HCl Chlorine is obtained.

Chlorine is evolved when an acid is added to an alkaline Hypochlorite

Nitrites may be useful } in alcohol etc
Nitrosyl Chloride }

Precip 3/16 of 7/1 mols per CC Manganous with 3 times bulk of 10% Aqua Regia in Alcohol after settling 2 or 3 times well stirred, finally when clear – pour off Solution + put in 100% Alcohol + shake well, let settle pour off + add as fresh 100% – to again wash then decant Sol + put residue on watch glass – When dry + OK Mon Cahoon gob of Putty give to Schenck to determine Chlorine

Act on dried B Mangrove
w Cup with 10% Aqua Regia

Methyl Ethyl Ketone
BP 81°C -
good Coagulator for
Mangrove (B) rubber
.71 wt/g per CC - better
than Alcohol 100% or
Acetone - big flocks
formed by 4 to 5 volumes of
Secondary Butyl Alcohol
write Solvents Co Peoria
about it

I think I now know what
is wanted to get good
rubber from Mangroves +
similar Solutions of rubber
in Solvents - The solvent
must ~~not~~ be solvable in
the Coagulating liquid
the latter neutralizing the
Solvent power of the Rubber
Solvent otherwise the
precipitate will sink with
the Solvent + will fill and
of Containing a large
amount of Solvent + be
a sticky mass -

Or the Solvent + precipitating
liquid must be continually
stirred + filtered at same
time so as to take off solvent
like Di or tri chlor with

-V

to seperated from Solvent
+ the rubber ultimately to
only immersed in the
precipitating liquid -

Possibly Alcohol precipitg
Orchard the latter
Can be boiled off while
being agitated -

Possibly Water + Orchar
Solution of Mangrove
if agitated can be
boiled off leaving
no Orchil + the rubber
will form a latex
If it dont some problem
Orchard can be put in
+ clung to rubber
Complaint + then
Coagulated by
Alcohol or ether

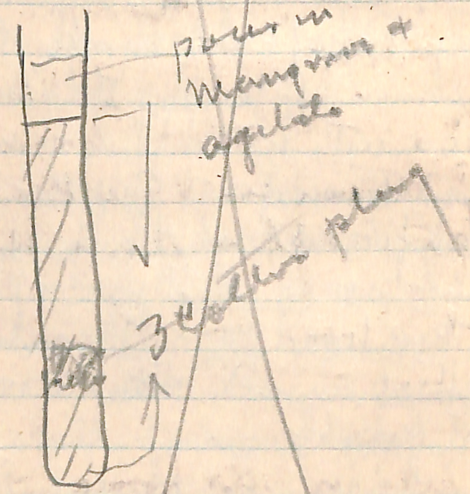
In the journal of Horticulture
is an article which gives account
of Rubber tree tapping Hevea

V.

Hevea tree is peculiar in having
bark of special texture vitally
The lack of fibre in bark of
Hevea + rather soft uniform
consistency of bark makes it possible
to shave off a very thin smooth
slice with no tearing or wounding
below the surface, Castilloa has a
thick fibrous bark, hard -
Funtumia + Manihot have
a thin hard bark, the same
method as used with Hevea is
not feasible —

Make Cup films of 10 cc
7% Mangrove + heat + with
1/2 Ether 1/2 Ethyl 10%
warm — Drop Methyl
Test remedies in all Ethers

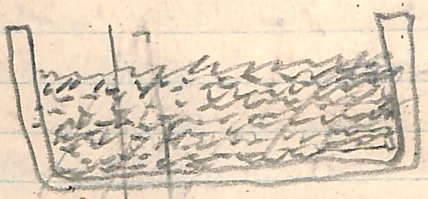
Drop Acetone 1/2 ml 10%



Try ammonia — + shake
ditto Alkahol + soap + pump
+ shake —
Try phos glacial acid dis
in Rubber Mangrove 7%
+ shake — ditto Naphthalen
do Benzoic acid —
all to make Ducks
less Sol for Rubber
+ add prudens
Try activated Carbon
Shaken in Pure Ducks Sol
Warm up — drop H_2S
mixed ml —

By feeding into Cone Dichlor
a very Sol solid to solvent
it might displace Rubber
if not sol in ml adding it
would take up precip
mechanically + Cigarette to
settle out

Use 50 mesh Sulphate Soda Anhydrous - powd Mangroves #1 on so Na_2SO_4 is below



have excess of Na_2SO_4
Then Distil off the $CHCl_3$
This leaves films of Rubber. Then crush up in Mortar and dissolve Na_2SO_4 + dry rubber
The granules will probably be stuck together after distilling off - possibly distill in Vacuum. The Na_2SO_4 should probably be in excess that the films will be very thick - of this Acts good try 150 mesh

What I meant to do after distilling is to wash the felts with ½ Al + ½ Ether to remove as much as possible, the Na_2SO_4 can be regenerated after pays

With these films we must keep from light

I'm wondering if after $CHCl_3$ is distilled off why water can't be put in + boiled + heated to boil + make a latex —

Treat $CHCl_3$ to Mangroves #1 with strong HCl to form Terpene Hydrochloride without effecting the Rubber terpene - find out Solvent for terpin HCl, that is not Solvent of Rubber

Dissolve some Non Coherent Dry Mangrove Rubber after treatment with Aqua Regia to make it non Coherent + dry in dish + gather, dissolve in Alcohol, see if all dissolves as it may have insect Cloth

Precip Mangrove #1 with Alcohol saturated with HCl dry gas - or 10% HCl. as less - filter &

Try Extract with gasoline Mangrove - all stuff - then treat with Acetone (1) treat gob

Extract in Soxhlet Leaves with Low BP gasoline - distil down + Evaporate then with Lepsa residue, Resin Etc in Extract — Now treat this with Acetone see if Rubber good - this is a cheap process as only rubber is treated with Acetone —

Prep with Benzol.

100 pts Carbon Disulphide + 2½ parts of Chloride of Sulphur, Cold then Washed in lukewarm waters if thick films are wanted several dips must be made

Another Method, Soak the rubber for a number of hours in a soln of Pentasulfide of Potash of Spec G 1·250 heated to 252°F then wash + dry –

To Vulcanize with Sulphur –
Cuttings of rubber mixed with 7/10ths % of Sulphur – brought up to 252°F

Granules to be mixed for drying
Manganese 7% Di Chl
Fused Ca Cl2
Carbonate K – Cold 8g

Dihydrogen Phosphate
KH_2PO_4 V Sol cold Alcohol

K phosphate. V Sol cold Alcohol

K_2SO_4 – Sol 8 pts cold Alcohol

KNO_3 13 pts water Cold
247 hot, insol Alcohol Ether

Sodium Bromate 24 cold
900 hot insol Alcohol

Disodic phosphate 6 Cold
236 hot insol Alcohol

Na_2SO_4 – 5 Cold 42 – at 212 insol Alcohol

Ditto 7 aq – 25° Cold 100 boil insol Alcohol

Use Cup- dry some Mangrove ♃ - after dry treat with Ether, in closed Extra bottle away from light - also dry the Mangrove away from light, ppbly best in Vac

Generally pour off Ether + dry out of light,

Dry by subsidiary Acetone ½ Ether ½

Dry Acetone alone gather in bath -

Make a test of the Chemicals that dont dissolve Havea worms + Try these for washing dried Mangrove ♃ - to free it from terpene

Make some Barium Hydrox in alcohol; its sol

also Conc BaOH in water

Also some fresh CuOH in alcohol ♃ sol + also in water -

BaOH is sol in water 3½ pts to 100 in boiling water

Dry Expts generally with Bengal Mangrove also Trichloro Ethylene for Economy

Bengol is sol Al + Ether this should work with Mangrove in Bengol with precipitation with Al also precipin with Al + Ether

Dont work with ½ Al ½ Ether no chat or even shock

Schmerka should Exhaust Mangroves with Benzol + dry to see yield of %

Sulphur ordinary dissolves
Bi Sul Carbon at 16°C 38 pts to 100
Benzol 86°C 1%
V poor in Alcohol
Ether 0.188 another man say Sol 12 pts

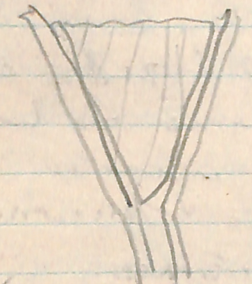
Schmerka put ½% of the weight of Mangroves of Sulphur in Benzol + Exhaust in Soxhlet Bott down to dry + bring up to 255° for ½ hr. Rubber ppts. Should precipitate it + make very flaccid

When we try to vulcanise Dichloro rubber prescribed we many times get insoluble Clots Dichloro This is due to Sulphur in leaves or from somewhere I want to prove this by actually putting in say 3 mlg of up a 1% sol also confirm by Hanus worm solutions — It seems that an almost imperceptible amount of Sulphur alters the solubility of rubber in Solvents, there must be S in some leaves

Expt on making a thimble to fit a Kong test tube same dia as Vial + use alcohol to precipitate pouring in Mangrove Dr Chlo at 70° + shaking allowing Serum to settle down

Carrying the Dichloro to lower part of tube - then washing with 1/2 Al 1/2 Ether, dry away from light

Where are may closed Cases for the trade of 12 @ 16 Cups to keep light away + store -



Try Trial full, 1/2 Ether 1/2 al / Shaken + poured in tiny funnel

If good results use Magee funnel in small beaker final wash with more 1/2 + 1/2 — try al along test fillerate

Payne — in Electro Solubolidin Chadnow Maintains that hydrated ferric iron is only Sol when KOH or iron Contains Silica, Chasbestos less sol when KOH Contains Carbonate of KOH —

Schmerka find of our ignited ferric OX Contains Silica — ditto KOH, ditto Na OH

Payne the Oxide of Mg can use as Carbolic in Tube thus absorbs Moisture from the air + becomes hydrated I expect when brush off + put in KOH & hydrate Magnesia is sol in Silicate Soda

For a small flash light battery
think Tin would be better than Zinc
with Silicate of K as Electrolyte
Cu Oxide. 3 cells — Have Hart
put some Tin in KOH 21%
Schmucker Weigh rate how it
stands the KOH.

Payne Iron Oxide

Chodnew Jrnl pr chemy
1843 28 pp 221 222

Says Sol.

Sandrock denies it
says depends on presence
of Silica no reference

Try it —

Req purify NaOH &c —
add 1/3 Ether to this —

Dr Small now thinks the
supposed Cheiropodium
Vercumdulus is —

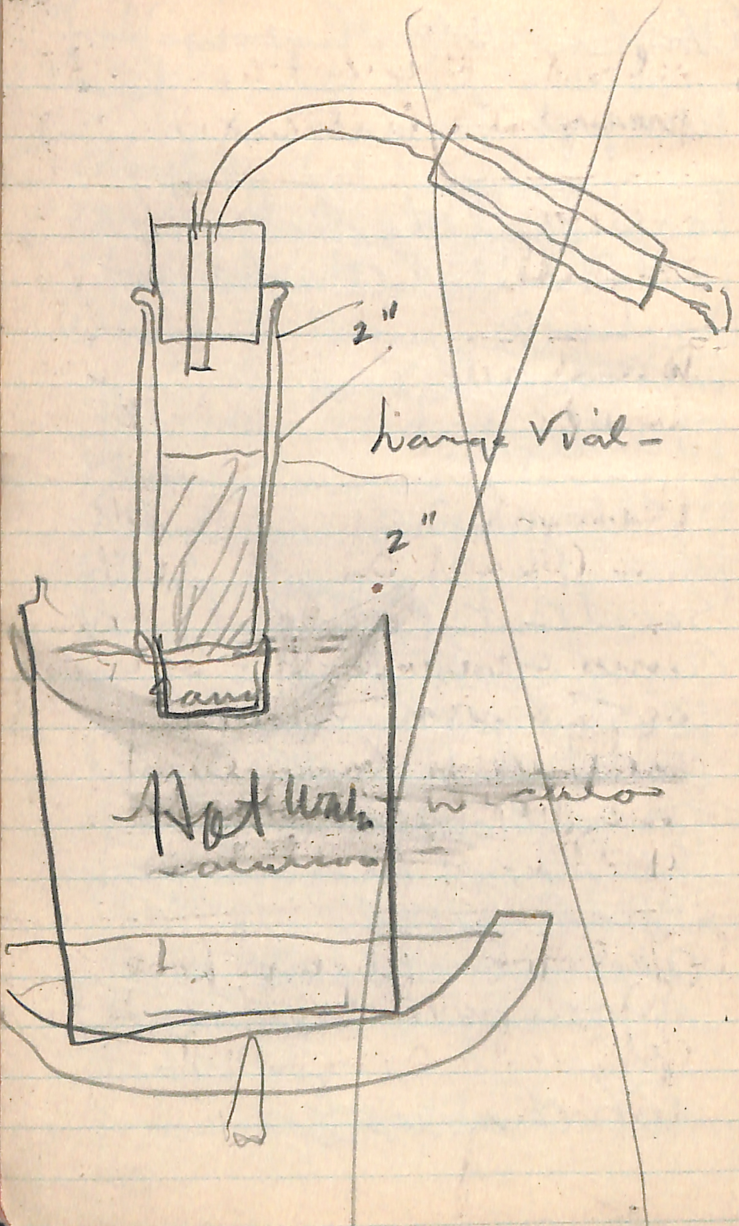
Chrysothamnus Pinifolius
but not sure

Following Legends do not suffer Heavy worm

Ethyl-Methyl Ketoxime ✓
α-Methyl-hydroxylamine
Furfural Acetate
Ethyl-β Bromopropionate
Methyl-Fluorate
Benzylamine
Ethylidene Di Acetate
Ethanolamine
Methyl lactate
Diacedone Alcohol X
Ethyl Oxalate X
Ethyl formate X
Methyl Chlorocarbonate
N-propyl Alcohol
Ethyl Aceto Acetate X
Diacetyl
Trimethylene Bromohydrin

Ethylene Chlorohydrin
Propyl Formate X
Isopropyl alcohol
Tert-Butyl Alcohol
Aniline ⊗
Dichlorohydrin
Butalyde
Dichlorohydrin
Phenyl hydrazine
Sec-Butyl Alcohol
Amyl Alcohol
Butyl Phthalide
Acetic anhydride
Propylic Alcohol
Ethylene Chlorohydrin
Iso Eugenol
Alpha Dichlorohydrin
Azobenzol Hydrochloride

36 Chemicals



Solvent Dichloro	56
precipitat N-Butyl Alc	117
Dichloro	56
Ethyl al,	78
Dichloro	56
Water	212
Benzol	80
N Butyl al	117

This scheme for boiling off Solvent leaving the Rubber entirely in the precipitant seems good one,

10% aqua precips Dichlo
Mixtures 100% good
Gels seem solid by boiling

Abramaka Solution of
20 + 30% aqua regia
in Alcohol + Boil –
Could boil in little
still + distill off the Dichloro
also try Mangrove this way
in other Solvents Benzol
Tetrachlorcarb/ Chloroform
etc

Abramaka had trouble
in Concentrating Rubber
from acetone charges
bumping when it got
thick – perhaps could
be got down by using
a steam or boiling
water + a shower. This
should stop bumping

Theory = Mangrove has
1 or more high boiling
point terpenes in addition
to the Rubber terpene –
When dichloro solvent is
Volatilized these oils are
left To get Rid of them
they could be distilled
off probably without
harm to the Rubber terpene

They are volatile but low
vapor tension as is Evidenced
by the improvement in
the gobs by drying
several days we after
Exactly dry the rubber
improved,

Use action of 10%
aqua regia is recommended
upon terpene,

Terpines

B.P Turpentine 156°C = 312° F
" Terpenine 179 C 354 F
" Terpenol 218 C 425 F
Terpenolene 183 C 362° F
Terpenene solid at 35°C 95° F
Terpineol Liquid
Cineol Liquid

Pinine
Camphene

Limonene
Dipentene
Sylvestrene
Terpinolene

Terpinene
Phellandrene

Chill out Mangrove up 100 mls Mangrove by as low temp as possible get some solid CO_2 see what chills out

Terpene Chlorides are formed by passing HCl into Ethereal Solution of the terpene –

HCl passed into Ethereal Sols of terpines form addition Compounds These are decomposed by alcoholic Potash

Cineol is a liquid BP 177 C

Alcoholic Ammonia Orndorff reagent – dilute Alcoholic Conc H_2SO_4

Roscoe + Schorlemer has full account of terpenes - Vol 3 part 5 at House

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to Hydrogenize - use say 2% Sodium Amalgam in Alcohol. For instance Monobromo Camphor is regenerated to Camphor by this reaction Thus is a powerful Reaction

Action of Acetic acid Containing 1 to 2% of Sulphuric acid, reacts with terpenes

on oxidation many terpenes yield terephthalic acid

Linalool is of the terpene family Is Contained in Hevea Latex

Ethyl Nitrite, acetic acid + HCl mixed, give Nitrosites

If Benzol is used for Extraction it is likely water can be run in after most of Benzol distilled off + the water will remove the last remnants of the Benzol to be conducted direct to by use of Straw vat

Precip Benzol Extract with Req 10% Alcohol, then with ½ water + (10) Alcohol ½ H_2O ½ - then put on hot plate + boil off All the Benzol + Alcohol both have about same B Points —

Get a Cup that was dried film of Mercuric in Dichloro pour water out + look on hot plate

Boil on hot plate in Vial Benzol Mangrove with a little grains of Carbide add 1/16 dia - Wash water,

~~Dry at room~~ Try Vanadium NH4- Hcl, Aqua Regia 35% soln / 1/16 dia / H2SO4

Get # of plant Key Lang E Col found Lecky Kennedy + Look at the Herbarium +

Methyl Ethyl Ketone BP 78°C Benzol MP 78°C C - precip + took off - Mangrove

Try Hexed in 4 different solvents all night with Zinc Cl2 see if hard rubber, ↑

Get 1/2 Gm Phosphoric anhydride -

Widths Try strong glacial phosphoric with Rubber soln

See Hart have/him make some strongs/on Cl2

Mercuric Iodide dissolved in aqueous potassium Iodide (Mayers Sol) is best test for Alkaloids, it produces an abundant white yellowish precip, for precautions, Applied chem Thorpe last Vol p 903

Another Method grind dry leaves fine Mix with Caustic lime equal weights make a paste with water dry 212°F + Exhaust with Dechlo or Benzol - or at first with Acetone + then with Dechlo or Benzol

Other reaction pp by Acetate Lead + Basic Acetate Lead Removes things out of Sol.

Also tannic Acid H_2SO_4 preferred

Alkaloids Thorpe Applied Chem last Vol - considerable information -

Acetone forms a crystalized Compound with Calcium Chloride,

Methyl Alcohol Combines with Calcium Chloride which isn't decomposed at 212°F

Eupion from Wood Tar BP 47°C insol water not readily Sol in Alcohol or, Ether, dissolves rubber on warming

$ZnCl_2$ is readily sol in Alcohol
Anhydrous $ZnCl_2$ has Spec Gr
of 2.750 melts at 110° Cent
to a wax like substance when
Anhydrous
The Conc Sol is a powerful
Caustic on flesh, semi dissolves
paper, or Mercerizes it,

Picric acid yields sparingly
Soluable Compounds also
insol. with Alkaloids
Combines with many hydrocarbons
forming molecular Compounds
which vary in their stability
Alcohol
These compounds are readily
decomposed by Ammonia into
their constituents -

In stripping Rayon fibers
Skeins are put in chamber +
Subjected to steam for 15 to
30 min then when back is easily
removed

Osmotic Analyzer -
Phenol to Eugalalen +
many of the terpenes -

Liquid terpenes can be
washed out on Rolls
Ulsch - use ice cold
water
Resins removed by Alcohols
NaOH,

Stop use of Chlorine Compound
aqua Reg Chl Zinc -
Use phosphoric acid glacial
do apply do,

Acetone does NOT dissolve rubber. Therefore all gobs or films should be washed with acetone alone to probably dissolve the terpenes, after finished + not before —

Try ppt with cold NaOH in alcohol — also in water + by Carbonate NaOH Borax etc

Redissolve in Benzol some of the dry gobs that will not cohere + make films in Cup see if they will cohere

Wash gobs on roll with $SnCl_2$ minimum cold,

Try 1/2% Nitric in water with 1/16 film Manspeaker Benzol Sol on top — use 1/2 inch of the acid water in small beaker 24 hours soak —

White Nitric, 1/4 also 1/8%

Make some Conc Sodium Sulphite

get some fresh Glacial Phosphoric Acid — make Conc Sol —

Alcohol

Treat Everything with acetone before Storing 24 hours

I find that Conc $ZnCl_2$ also Ortho phos acid Sp g 1.75 act as dehydrators + probably without harm to rubber The Bengal Mangroves at Dichloro solution The Sols poured on $ZnCl_2$ at phos acid + remain 24 hours till Dichloro or Bengal Evap— I believe 48 hours will be necessary perhaps with a little heat, as not the slightest trace of Solvent should be left otherwise strength + elasticity is harmed

Then films should be put in Concentrate water to soak out the Zinc Cl2 This seems to require more than 24 hours as test shows presence of Zinc in the water longer than 24 hours each fresh change of water — It burns pure water Lake Horse — after perhaps a little heat would — after 24 hours the Rubber film is still sunk in water showing presence of $ZnCl_2$ Then if further dehydrated by Acetone

and dried in a Vacuum heated. I think it will Cohere — Even if it dont Cohere I think it will Vulcanize OK—

Phosphoric acid may be better than $ZnCl_2$

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put 4 more grams Hevea Rubber in the big bottles, to Continue Experiments

I believe our present method of ppty with Alcoholic NaOH is bad—

and also our drying at 135 @ 120 probably wish to get no Rubber

Try some Manganese Benzal & Dehro Orchs to get acid from plants dried 212° F

Perhaps our $ZnCl_2$ should be in Anhydrous Alcohol. so it will be a better dehydration

Try with Benzal Manganese 15% NaOH + shake with Carbon disulfide to make Viscose of anything in the Crude Rubber

Try all the terpenes in
Conc ZnCl – ditto
phosphoric acid –
1.75 spec gravity –

Stir phos anhydride
into Benzol Mangrove
without water –

Make Concentrated Soln
of a dozen very solid
to pour Bengal Mangrove
on When soak up Crystals
4 small beakers, transfer
one to the other so final
has almost C.P. Crystals

Try alcohol – Methyl
Ketone + Hydrocarbons –
others

Try various strengths of
glacial phosphoric acid
& water,

Strong Soln of glacial
phos in 100% alcohol.

Try pouring Benzol
Mangrove over phos acid
warmed to 60° Cent
to hasten Evap of Benzol

See if phos acid &
also ZnCl dissolves terpenes

Water absorbing power of glycerine (CP) is very great it will absorb 50% by weight from the atmosphere — Dry Bengal Mangroves —

Determine determine of Bengal is not in alcohol what can use this

How Bengal Mangrove
ditto Duchess "
on phosphorus
ditto ZnCl. put on hot plate — see effect of heat,

Select a Bengal of Mangrove
ditto Dried Dry in
the Cup — pour. ZnCl
drip — Ortho. Phos acid —

Where a gob pg or Rem dried it lost its Elasticity This is OXIDATION We are up against this + must Change our methods

send for some of the advertised non Oxident

Dry Ortho Phos acid M+Ellis in Alcohol or Acetone Ketone or any mentioned it will dissolve —

Turpentine is acted on by
Ortho Phos acid Colors it
Violet $ZnCl_2$ appears
to have no effect.
Got from Schmidt the
names of other terpenes tested
as above + record in book

Meta Phosphoric acid Coagulates
Albumen -

Glacial Phos acid is
Metaphosphoric acid
See if Glacial works →
I think only ortho
worked + is one I used
Try also pyrophosphoric acid
Rubbers not white like
ortho phosphoric acid
but grayish -
10 Oct
work

5

Conc Boric,
Pyro some Salicylic
Phosphates Picric a
Phenol / pyro tartaric
Water - Aniline
Molybdic acid Tungstic
acid - Citric acid
Tartaric acid -
Bromic acid V Sol cold & Dec
Boric Oxide Sol Al.
Chromic Sol Al - Grey Acetone
$CrCl_2$ 6 aq - V Sol H_2O do Al
Chromous Cl_2 V Sol aq
Ni Cl_2 $CoCl_2$
Chl Cuprous ic dittos
Sulfate Cu Cupric Ammon
Chloride Cupric ammon H_2SO_4
Ferrous Nitrate
Ferrous K Oxalate
Hydrazine - ditto & Hydrate
Hydrobromic acid
Hydroxylamine -

Iodine — Lactic acid
Lead persulphate
Lithium Hydroxide —
Mercuric Acetate
" Chloride - Sol Alc & Aq
Ammonia — Oxalic acid sol
" cold 350° hot
permolybdic acid V sol aq
phosphamic acid V sol aq
phosphorous Acid meta ortho pyro

Aceto-acetic acid

Acetol — Benzol o-Sulphonic
Litho meta Salicylic acid
Benzoic Acid Sol Alc - Ether
Bromoacetic Acid
Chloral Hydrate
Succinic Acid

Naphthol acid
phthalic Acid Sol Alc -
Picric Acid,
Condemned Below

Sodium isobutylnaphthalene
Sulphonate - to treated
with Potassium percarbonate
Thus used to change
Isoprene into Rubber
Late German patent

Lead Acetate
precips many things
Conc Sol Sulphuric
Acid -

Nitrite K do Na -
Potassium Methyl Sulphate

Sulphonic acid.
Guaicol - reacts Ortho

When back from Rochester

Try Benzol Mangrove with few drops strong phosphoric acid & a Glucose to thoroughly mix to a mush for ½ hour, blow on it to evap Benzol then put in big water then Acetone - Left for phos before Acetone

Get Milk weed leaves

Latex Tall thistles & Extract & test with phosphorus to see effect on actually rubber

To replace phosphoric acid try H_2SO_4 on Alcohol

Try Evaporated Acetone Extract very strong acid pour on phosphoric thin see if any rubber in it -

Fuller's Earth 92% - 96%

Turpentine in tall jars & watch, see what it is -

Schmeltz Melt Ratoff, & whole red hot feed it with Carbo Nickel & raise temp to get it anhydrous Oxide for Payne

The K Silicate Evap down till very thick like glycerine to have all Cut CaO & make a cell

Acetone Bottle Lost for Hard Cane Sale=

Paraphenylene diamine

Hexamethylene tetramine

glycerine - Brigar

Thick Molasses Syrup

Gelatin -

Albumen

Spooned nearly 3/8 thick Solution Benzol Naphthol over top of Ortho phosphoric acid - it dried to a film 3 or 4 times as thick as usual but it was black on top & transparent underneath I put it in water to get out phos acid but for I know it did not leave colorless as with thin film I left it to go to Rochester will be back Monday my Opinion is that phos acid never came in contact with the major part.

Will have to make thin film so it can get Contact with phos acid & get the reaction or by a means going to naphthol -

It appears, that there must be a power to give Rubber its peculiar properties Something sol in Benzol + also water There seem present of long elastic organic molecules to keep water to dissolve impurities out — Thus is a new line of thought

Try washing Mangrove powder, when exhaust with Acetone + Benzol The Mangrove showed to be well wet with 90% Ortho phosphoric acid then resolidified — The phos a will go down

Hand 62 Fla
5.06% —
see foliage
Pterocaulon Chinolatus

See if white of Egg — jelly of Gelatin — gluten of wheat is precipitated by Ortho phos acid

Try Benzol Mangrove 4 cc 1/2 cc Ortho phos acid — warm at 175° F after drying 10 mins

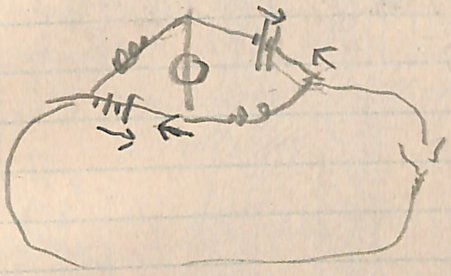
Ortho 5 cc Benzol M
+ 5 drops Orthophos
acid 175°F. Cut
thin long time cold
before heating -

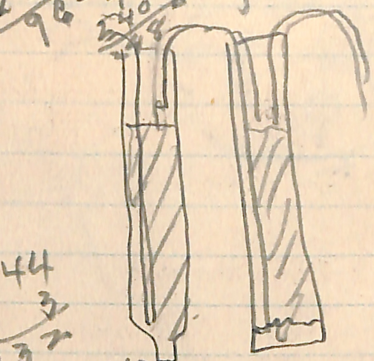
Try Salicylic acid
in alcohol Reg Dr H
95% -

See if phosphoric anhydride
dot in 10% alcohol
without charring action
of K test with Benzol Mercuric
Conc - afterwards dilute
with alcohol +

Try Conc glycerine
instead of water

Botonia Lotr fodaz
Phlot Lotr fodazi





6 acres 12 tons cleark 24 days 144 days 288 Tons

Milk work for (3 tons day) 96 days — Equals 432 acres work mill full —
or say — 2 men mowing 1 month — $200 —
3 mill men $420
2800 a total $3000 a month
per month 17,360 lb

144

$\frac{2496}{96} \quad \frac{12}{24} \quad \frac{24}{48} \quad \frac{48}{240} \quad \frac{240}{5500} \quad \frac{275}{20}$

$\frac{144}{4} \quad \frac{3}{3} \quad \frac{3}{2} \quad \frac{2}{4} \quad \frac{4}{8} \quad \frac{8}{64} \quad \frac{64}{432}$

$\frac{2496}{144} \quad \frac{280}{6} \quad \frac{280}{140} \quad \frac{140}{280} \quad \frac{280}{0} \quad \frac{3}{4}$

$\frac{12}{24} \quad \frac{24}{48} \quad \frac{4}{2} \quad \frac{8}{4} \quad \frac{2}{8} \quad \frac{4}{16} \quad \frac{868}{1736} \quad \frac{20}{0}$

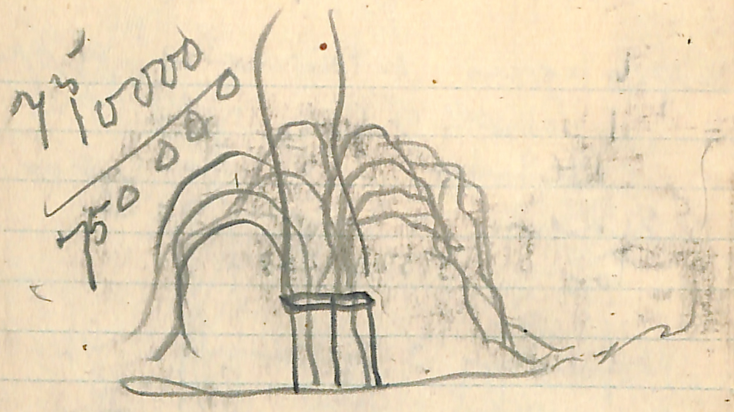
Dairy 6 acres 2 Tons acre 12 acres
1 month to Cut
~~144 lbs~~ 275 tons - Cut per season 24 days — 20 lbs ton — 5500 lbs —

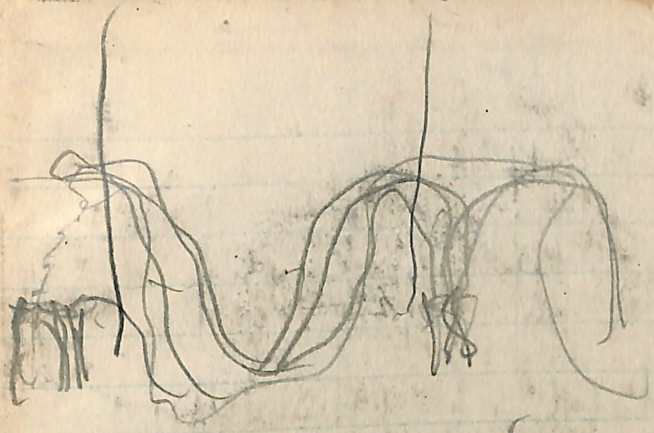
feeding 3 tons daily
$\frac{280}{84} \quad \frac{3}{0}$ 840 tons —

$\frac{6}{840} \quad \frac{140}{0}$ Season of 280 days 140 acre plot

$\frac{2}{16}$ acres —
144 — 140 tons season
24 days give 280

$\frac{17360}{1736} \quad \frac{300,000}{1736} \quad \frac{16}{40} \quad \frac{16}{0}$





1 ft

4 ft.

000	2'	000	

total 6 ft | 42000 | yard
42

7 000 plants 1 oz dry

450 | 7000 | 155 lbs to acre
450

2500
2250
250
2

155 lbs	10
310	20
620	40
1240	80 oz